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on the other hand, is fatal only to goats and asses. The malady caused by it develops itself by enormous swellings of the scrotum and adjacent mucous membrane, and the animals breathe with difficulty. Blood and purulent matter flow from the nostrils, and death frequently ensues within two days after the puncture. On making a dissection I found the intestines covered with small tubercles, and what looked like blisters. I have never myself seen the Donderobo, and, notwithstanding the offer of a high reward, have never been able to obtain a single specimen. The natives told me that it looks like a large thick-bodied fly, and is most plentiful after the rainy season, when their flocks of goats are sometimes decimated.

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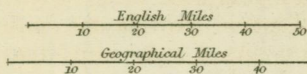
II.—*Notes on the Island of Formosa.* By ROBERT SWINHÖE,  
F.R.G.S., H.B.M. Vice-Consul at Formosa.

TAIWAN, or Chinese Formosa, is considered a Foo or district of the province of Fokien, and is governed by a Taoutai extraordinary, who, though responsible to the provincial viceroy, possesses the privilege of memorialising the Throne direct. "The district of Taiwan," says the Chinese Government Chart, of which a copy was supplied to me by the Formosan authorities, "is bounded in the rear by mountains, and in front by the sea. The ancestral hills of Formosa derive their origin from the Woo-ho-mun (Five Tiger Gate), the entrance to Foochow, whence they glided across the sea. In the ocean towards the east are two places called Tungkwan (Damp Limit) and Pih-mow (White Acre), which mark the spots where the dragons of the Formosan hills emerged. These sacred reptiles had pierced unseen the depths of ocean, and announcing their ascent to the surface by throwing up the bluff at Kelung-head, by a number of violent contortions heaved up the regular series of hills, valleys, and plains that extend north and south in varied undulations for the space of 1000 leagues (applied figuratively). The mountain-peaks are too multitudinous to enumerate, and the geography of the island too comprehensive to take into present consideration; we will therefore confine ourselves to a few general remarks. In rear of the hills, eastward, flows the ocean; facing them, to the westward, is the sea; and between lies the prefecture of Taiwan." The map then proceeds to define the different departments of the district, and to state what hills in Formosa are visible from what hills on the China coast, and which ports on the island are nearest and most accessible to which ports on the main.

In December, 1860, I received my appointment as Her Majesty's

to illustrate the Paper by M<sup>r</sup> Robert Swinhoe (Vice-Consul)

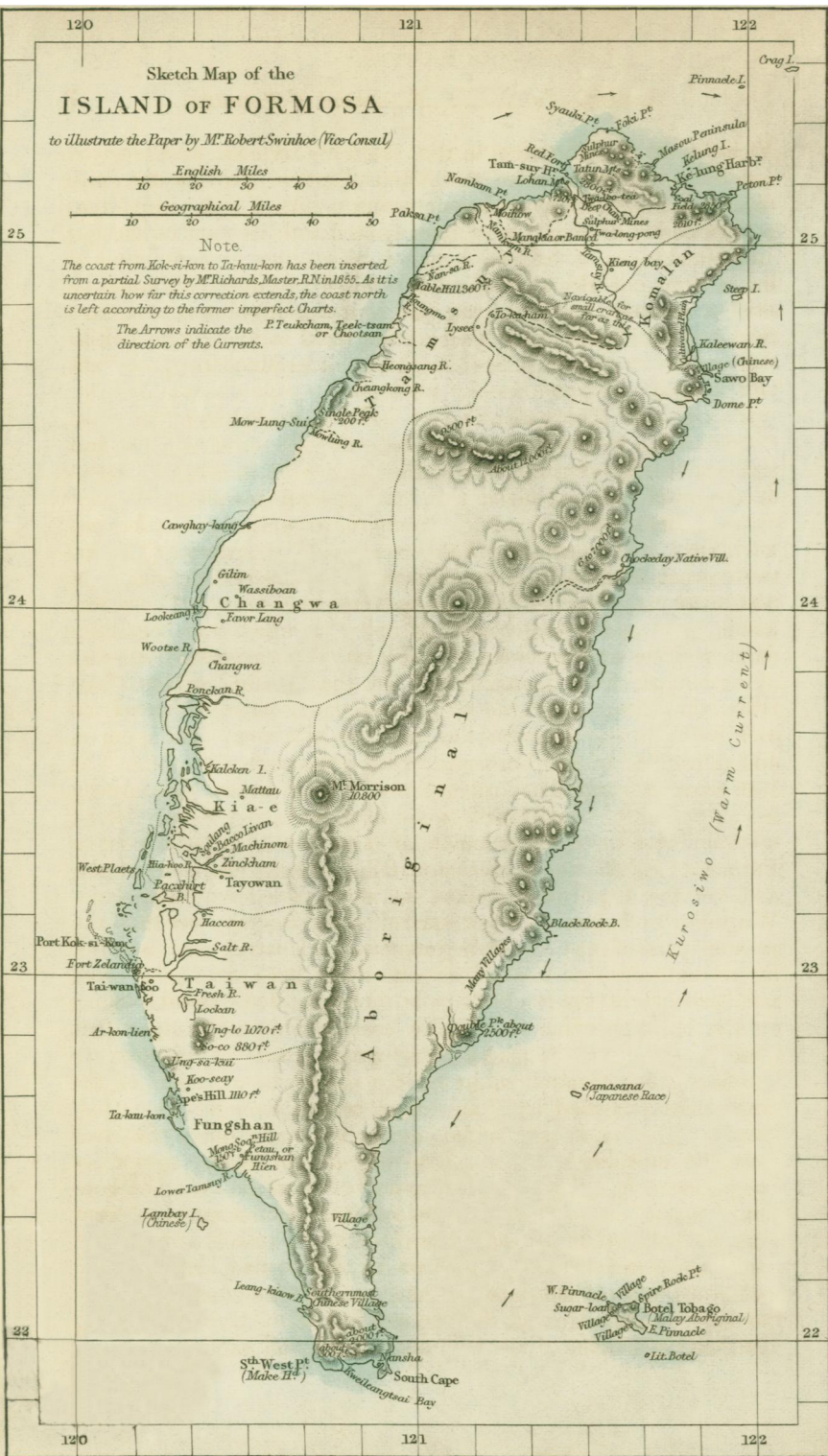
to illustrate the Paper by M<sup>r</sup> Robert Swinhoe (Vice-Consul)



Note

*The coast from Kok-si-kon to Ta-kau-kon has been inserted from a partial Survey by M<sup>r</sup> Richards, Master, R.N. in 1855. As it is uncertain how far this correction extends, the coast north is left according to the former imperfect Charts.*

The Arrows indicate the direction of the Currents.



Vice-Consul at Taiwanfoo, in the island of Formosa, and received orders to go, as soon as the Admiral would provide me with transport, and set up a Consulate there. As I had visited that port twice before, and was well acquainted with its want of harbour accommodations, I had no hope of succeeding in converting it into a centre of British trade. We failed to enter Taiwanfoo by sea, on our arrival off the port; and as it was absolutely necessary that I should make some stay in the capital to inaugurate British trade under the new and legal regime, I determined to disembark on the coast and march thither overland.

The city of Taiwanfoo is girt by a high battlemented wall some 6 miles in extent and quadrangular; it is, in fact, a small and poor imitation of the wall of Peking. Within are the houses of the chief citizens, mandarins, and several temples dedicated to the three religions of the empire, comprising Confucians, Buddhists, and Taoists. The open park-like spaces, with fine trees, green lanes, hedges and ditches, give a refreshing and rural aspect to many parts of the large straggling town. There was a sullenness and a stillness about the place which was peculiarly ominous, showing that what life the city once possessed was fast dying out, an event brought about by the shoaling of the small rivers that lead under the wall, which has compelled vessels to seek harbours elsewhere on the long line of coast. The dangers and difficulties of the Formosan coast, even with the aid of the best surveys, cannot be exaggerated. It is true comparatively few ships visit the coast with a view to trade, but vessels bound up and down the Chinese mainland have too often to lie over to Formosa. With the increasing traffic wrecks yearly multiply, and yet the Government takes no steps to survey the island. With the exception of a few special spots, we may say that the greater part of the coast is unknown. I have been assured by adventurous masters of vessels that there are good and safe harbours at the South Cape of Formosa, and probably some on the lower portion of the east coast. The advantages that these would afford, as places of refuge in stress of weather, to vessels availing themselves, during the north-east monsoon, of the Gulf Stream beyond Formosa cannot be too strongly advocated. During our stay at Taiwanfoo, owing to heavy rains, the river increased in volume, and, much to the delight of the authorities and citizens, forced a deeper channel through the bar. A continued succession of these volumes of water might, perhaps, for a time have opened the port for the reception of vessels of moderate burthen, but unfortunately a few weeks afterwards a change again took place, and robbed us of all our hopes by once more shallowing the bar. Lieut. Holder, of the gunboat *Cockchafer*, examined again and again the three entrances by way of river to the city,

but in vain. His final verdict was, that no European vessel of the smallest burthen could enter and lie with safety in the so-called port of Taiwan. I was therefore reluctantly obliged to give up all hopes of ever establishing a port of trade at the capital of Formosa.

The Tamsuy River, which was destined to become the British port of trade, discharges itself into the sea on the north-west coast of Formosa, over a bar, giving 16 feet of water at high tide. From its proximity to Foochow it has long been the highway between the Formosan and the provincial capital. The Ta-tun Mountains on its north bank, and the Lo-han Mountains on the south bank, both near its mouth, afford excellent landmarks to the entry of the river; and the narrow gorge, 6 miles further inland, where the river contracts, well defines the limits of the harbour, in which a good many ships of moderate burthen can procure safe anchorage. A sandbank, laid bare at low tides, runs east and west through the harbour, and unfortunately narrows its limits. Above the gorge the river enters a large plain, well cultivated in summer with rice, in winter with corn and vegetables. It here speedily divides into two, the main branch winding away past the town of Mangkia, or Banca, into the wild mountains of the interior; while the confluent branch takes a turn, and after a series of insignificant rapids, terminates about two miles from Kelung. This latter branch I ascended in 1857 to its source, in company with a party from H.M.S. *Inflexible*. On our return to the ship we anchored in Kelung Harbour. We had passed overland to the sulphur-mines, whence we crossed the hills and descended to the banks of the Tamsuy River. I published an account of our trip in the 'Journal of the North China Branch of the Asiatic Society' for 1858. The great danger to shipping in the Tamsuy Harbour is experienced in the early summer, when, after excessive rains and the melting of the snow on the mountains, the freshets convert the entire river into a large rapid, which drives everything before it. Ships then find it difficult to hold ground with their anchors, and the only means by which they can be prevented from drifting to sea is by mooring firmly to the land.

I must make my sketches of Tamsuy brief, and will therefore confine myself to a few remarks on my visit to the interior in search of the aborigines. About two hours' walk eastward of Banca lies a large village, through which runs one of the most laborious works of art which the Tamsuy people have undertaken. The water supplied by the springs in this large marshy plain was found to be brackish and unwholesome. It was therefore thought advisable to bring down a mountain-stream to supply the population of the plains. Such a stream was found about 8 miles in the interior from Banca, leaping down the side

of a mountain into the river, in what was then, some forty years ago, savage territory. The savage hamlet in the neighbourhood was assaulted and the aborigines driven away. A tunnel was cut into the foot of the mountain, 16 yards long, 8 feet broad, and about 14 feet deep, and the course of the stream diverted by degrees into this. In the progress of the work the labourers were frequently attacked by savages, and about sixty of their number killed before its completion. The water, which is very sweet and fresh, is led in a prepared channel, maintaining a depth of from 3 to 4 feet, into the village of Kieng-bay, which, being built on the two high banks of an affluent of the main river, required an aqueduct to conduct the water across. A wooden aqueduct was accordingly built. It runs from bank to bank about 30 feet above the river, supported on a series of strong wooden crutches. From Kieng-bay this water-supply is led on to Banca, and thence to Twa-loo-tea, some 5 miles further. The line of demarcation between the territory of the Chinese and that of the aborigines is at once observable by the fine timbered hills that mark the hunting-grounds of the original possessors of the island. The Chinese territory is almost entirely denuded of trees, and cultivated on these interior hills mostly with the tea-plant, introduced from China. The absence of the primitive forest has naturally wrought a vast difference between the flora and fauna of the two territories. Coarse grass has covered the cleared hills, and the place of the woodland birds, the deer and the goat, has been supplied by larks and birds of the plain, and by pigs and hares. At the point I reached, the river divided the two lands, over which the savages were in the habit of coming in boats ferried by Chinese, to barter their wares. Across the river the lower wooded range was considered common land, and not suffered to be crossed except by permission from the chief of the clan.

From the end of November to the first few days of May rain and clouds are the order of the weather at Tamsuy; and on my arrival the mandarins assured me that the two first things usually provided for a visit to Northern Formosa are a good umbrella and a strong pair of boots. The dampness of the air makes it unpleasantly cold, though the thermometer shows a high temperature compared with the same latitude on the China coast. It is well known that the season of the north-east monsoons is one of continued, almost cloudless, sunshine, on the coast of the mainland from Foochow to Canton. It cannot, therefore, be doubted that the cause of constant rain in North Formosa is owing to its propinquity to the Pacific Gulf Stream, over whose heated waters the north-easterly wind blows before it reaches our island, and with its surcharge of moisture, coming in contact with the lofty Formosan mountain-range, and frequent high hills, is forced by

their low temperature to precipitate on the island and 12 miles west to seaward. The wind then passes on to the southern coast of China, relieved of most of its moisture, and does not there hamper the clear pleasant winter sky with never-ceasing clouds of rain. Though an apparent curse to the island of Formosa, the beneficial advantages of the *Kurosiwo*, as the Pacific current is called, in many respects no one can gainsay. Its continual northerly flow on the east of Formosa enables the mariner to defy the persistent severity of the winter monsoon. It tempers the climate of Japan much as our northern British climate is tempered by the Gulf Stream from Mexico; and spreading its warm currents along the western coasts of America, it renders them so much more free from the severity of winter than the eastern coasts of that continent in the same latitude. To Captain Maury, late of the U.S. Navy, is due most of what we know relating to the Atlantic Gulf Stream; and for the first concise account of the Pacific Gulf Stream, the thanks of science are due to Commodore Perry's work on his Expedition to Japan. In this work (vol. ii., p. 364) the two streams are considered as starting on their course from nearly the same latitude. The *Kurosiwo* is made to take its source from the Bashee Channel off the south cape of Formosa, and passing up the east coast of Formosa, between it and the Madgico-sima Islands, to increase in breadth, with a central interval of cold water, to bend a little easterly, touching the south point of the Japanese island Kinsin on its northern edge, and thence to continue eastwards, spreading its volume, and including numerous intervening streams of cold water. Much praise is assuredly due for what has already been done in determining the bounds and proportions of this stream; but doubtless much remains to be done, for shipmasters assert that the warm stream flows up the back of Luzon, and has probably its source in much lower latitudes. This would certainly appear to be the case, from the fact of the winter climate of Luzon being attended with almost incessant rain, as at Formosa. I was informed by Captain Meincke, of the *Typhoon*, that there was a current setting down south, close to the east coast of Formosa, and that the line of demarcation between the deep blue Gulf Stream and the muddy coast-water, bound in a different direction, was very well defined. This line of division I had myself previously observed and noted in my report on the circumnavigation of Formosa, but without being then able to assign a cause for the phenomenon. This would naturally be the cushion of cold water that one would expect to find analogous to what Captain Maury speaks of as forming the landward bank on the coast of Florida to his "river in the ocean." I was also informed by the same enlightened merchant-captain

that he had observed trees and logs of wood floated up by the *Kurosiwo*, whereas north of Formosa the line of downward set of the China Sea is marked by accumulations of drift-wood, rattans, and so forth. To the kindly conveyance of this stream, I have read from Russian accounts, the Kurile islanders are indebted for the wood they apply to household wants, their islands affording none of their own. The warm water of the *Kurosiwo* manages, however, to find an entrance into Sawo Harbour, as it does also into Kelung Harbour, in both of which places white branching coral, usually characteristic of the tropics, is seen in the deep clear water, adhering to the rocks below, with brightly-coloured coral-fish gliding about amongst its branches. I witnessed these myself in Kelung in 1857, and watched fishermen catching, with hook and line, the richly-coloured fishes. I have not observed such coral or similar fishes anywhere on the west coast of Formosa, and believe that their existence is due to the warm stream. Large numbers of turtles and flying-fish are found in this tepid water all the year. The former occur on the west coast chiefly in spring, and the latter is somewhat rare in the China Seas. In January at Kelung, when it was raining in torrents, the air felt so warm that the cabin doors were obliged to be thrown open. North of Formosa, Captain Meincke informed me, a strong current, setting to eastward, extends up as far as Pinnacle Island, the influence of which is felt even over the tides west and east.

The almost isolated peak of Ape's Hill is of comparatively modern elevation, remains of living corals and shells being found at its summit. It is formed chiefly of volcanic rock, trap, and basalt. From the blocks of conglomerate limestone and fossil remains that lie about near its base I chipped off several specimens, most of which are coral and shells (*pecten*), referable to a late tertiary era. If this be the case, the beds of deposit which have been raised by the upheaval of the volcanic mass would prove of older date than I was inclined to suppose, from the comparatively recent formation of the rest of this low coast.

Judging from the bold appearance of the eastern, northern, and north-western coasts, the coast-line may be said to be in the course of gradual recession rather than of progression. Unfortunately the rock specimens I procured at Tamsuy were from near the coast, and only consisted of remains of modern shells and corals, and some bits of sponges, the portions of the limestone—the prevailing rock of the neighbouring high hills—that I brought with me having no fossils in them to lend a clue to the formation. At Ape's Hill the lime used for domestic purposes is, by the Chinese, burnt out of the white nuggets of limestone that they unearth from the hill-sides. At Kelung they use for this purpose the masses of



coral that occur in the harbour. In South China they are obliged to have recourse to oyster-shells.

The coal-beds that crop out on the hills facing the sea, near Kelung, and are there worked by the Chinese, are about 16 square miles in extent, and crop out again in the neighbourhood of the north branch of the Tamsuy River, whence this mineral is also procured and brought down to our harbour for sale. I visited the Kelung mines in 1857, and included the following notice of them in my report to the Shanghai Society, above referred to:—

“It is a long pull from Kelung Harbour westward, round to what is called Coal Harbour, where these mines are situated. These mines are worked by Chinese, who live at their entrance, in huts built of straw and wood. There are eleven or twelve excavations; the mouths opening out, at different heights, on the side of a hill facing the sea. I went to the end of one, guided by a man bearing a lighted piece of twisted paper. The excavation, which ran in a horizontal direction, varied from about four-and-a-half to three feet in height, and three to ten or more in breadth. The strata of coal run along on both sides in parallel lines, from one to three feet in thickness. The roof and floor were composed of sand-stone. Water was constantly dropping from the roof, and, mixing with the sand, formed a slimy mud. The hole ran in pretty nearly a straight line for 240 paces: at the end it took a sudden turn to the right. Small wicks in saucers of oil, placed in side niches, lighted up the gallery; and in the *cul-de-sac* we found five or six men at work in a state of nudity, with pickaxes, blunt at one end, and sharp at the other. The coal thus obtained is very small and bituminous, and burns fast, but with great heat and flame. It is very certain they get the best there is in that locality. They asked 20 cents a picul (10*d.* per 133 lbs.) for it at the pit's mouth, and declared that five men at work in a mine for twenty-four hours did not procure more than 30 piculs. They bring out the coal as fast as it is dug, in oblong baskets, containing a picul each, dragging the baskets over the mud on boards.”

Unfortunately, as might be expected from its occurrence in tertiary deposits, the coal turns out to be a lignite, and therefore can never compete with good English coal in the Hong-Kong market. In Commodore Perry's ‘Expedition to Japan,’ vol. ii. pp. 168-70, a comparison is instituted between the Formosan coal, two sorts from Japan, and Cumberland coal, and a decided preference then given, from chemical analysis, to the Formosan over the Japanese. In some respects it is shown to have an advantage over the Cumberland produce, and hints are thrown out as to the probability of a better material being procured if the veins were struck lower. But the fact of its being tertiary coal is quite against this.

As a commodity for steam purposes its value has been often tested. It is found to burn too rapidly, giving out an unpleasant—somewhat sulphurous—stench, and leaving large quantities of light ashes. For small high-pressure steamers it is of little use, besides being dangerous. From its inflammable nature the boats can carry little more than enough for one day's consumption; and the smoke is so thick and heavy that it often ignites the flues. Mixed with Welsh or other good coal it has been found serviceable for large steamers; and for such purposes its cheapness may ensure it a good future trade. In China it is much used among Europeans for domestic stoves; but the communities at the different ports are too small to create a large demand; and it does not seem to be in much request among the Chinese of the mainland, who prefer the dull-burning and equally cheap anthracite worked in many parts of China.

Not far from the coal-mines in North-west Formosa occur the sulphur-mines. Of these I am acquainted with two, which are not many miles apart, and are, I should fancy, subterraneously connected. The first of these, situated between Kelung and Tamsuy, I visited in 1857, when I communicated to the Shanghai Society the following note of my visit:—"The sulphur-mine appeared at a distance like a canker on the side of the grass-covered hill, which was fresh and green everywhere, except in the immediate vicinity of the mine. The broad sulphur valley or chasm had everywhere a pale sickly tint of yellow and red; and out of many of its numerous recesses hot steam gushed in jets with great noise and force, like the steam from the escape-pipe of a high-pressure engine. In other spots small pools of pure sulphur were bubbling. At the bottom of the barren ravine rippled a foul rivulet, carrying off the sulphurous ooze from the ground. Within and round about this hollow the earth underfoot rumbled and groaned, and the air was so saturated with the exhalations of sulphur as to become extremely noisome, and destructive to insect life especially, of which we saw abundant proof in the numerous remains of beetles and butterflies scattered around."

The second sulphur-mine is situated on the side of a hill on the north bank of the Tamsuy River, about 8 miles distant from the harbour. From the north branch of the river,  $2\frac{1}{2}$  miles beyond the gorge, a little stream bears you well across the plain, from which a land-travel through paddy-fields, and over the lower range of hills, brings you, after a two miles' walk, to the mines. The mould on these hills was very black, containing large quantities of lignite; and in it, some 200 or 300 feet above the sea, were planted tea and pineapples, side by side, both appearing in flourishing condition. The sulphur-mine was here as before, a barren patch among the hills, about 400 feet above the sea, and occupying a

space of some two acres in extent. The hills which formed the mine are covered with coarse grass, and are of the same formation—clay, sandstone, and limestone; the latter being often speckled with fragments of lignite. In some of the hills on the Banca alluvial plain, the sides of which were denuded, the limestone showed itself in large disconnected blocks, in parallel lines, partaking the curve of the hill-top, in the same manner as is exhibited by Whale-back and the few other hills that dot the large alluvial plain on which Taiwanfoo is situated, and which form the greater part of the Chinese territory on the south-west. The working of these mines is forbidden by the Chinese Government; and so rigid is the order, that the mandarins are obliged to send to Foochow for the sulphur required for manufacture of ammunition. And yet so lax is the vigilance, when blinded by bribery, that we found the spot alive with workmen. The arrival of Europeans had opened an extraordinary demand for it, to export at large profits to Hong-Kong; and the smaller authorities themselves, more or less interested in trade, soon found some means of relaxing their vigilance in the export of the contraband. Straw sheds of the miners were scattered about the ground in various directions; but the immediate neighbourhood of the mines presented a dead, dreary, Stygian look and sulphurous stench. White, grey, and black were the prevailing colours of the spot, relieved here and there by the red tinge of a stratum of clay and the bright yellow of sulphur crystals; while from all parts of the ground steam was emitted, throwing a haze over the scene, and conveying the overpowering smell of sulphur for miles around.

In some spots steam was rushing out with violence from between the bleached limestone blocks, and forming on the overhanging stones long pendent crystals of clear sulphur, looking like petrified moss of a bright yellow colour. In other places, where pits had been dug, and got filled with water, the violence of the steam produced bubbling of the water, with loud noise, making it leap in continuous fountain-jets, 2 feet or more in height. From the hills above, streams of fresh water ran down into the mines. About half a mile lower down the hills we passed another patch of bleached sulphur-marked stones. The course of a mountain-torrent ran close by this spot. The stream was of fresh water; but lower down, about 200 feet above the plain, it passed over a flat, sandy spot, where sulphurous steam again burst out in all directions, and the water there had become almost of a boiling heat, and strongly tainted; from this it continued a broad, clear stream down the remainder of the declivity, and across the plains to the river; but the water was noisome and undrinkable, though down its banks on either side trickled several streams of sweet fresh water. The sulphur is deposited about the stones in this stream in ochreous and

white crystals, and in the deeper parts the rocks, at the bottom, are coloured of a bluish-green tinge. The sheds built about the mine are merely to protect the stoves in which the sulphur is melting, and not to house the workmen, who return nightly to their homes in the valley. Grass is rooted up from the surrounding hills for fuel; and by its aid the grey slate-like mineral, quarried from the pits, is rapidly melted into treacle-like consistence. This is continually stirred until all the earthy metal-like substance is deposited at the bottom, and the pure sulphur floats at the top. The sulphur is then ladled out into hooped wooden tubs, narrow at the mouth, and broad below, and left to cool. When cooled the bottom of the tub is knocked out, and the sulphur drops out in a conical cake, weighing about half a picul, and ready for exportation. The earthy refuse left in the pan is thrown away. The contractors engage to place the sulphur on board the vessel of the speculator at one dollar the picul (4s. 6d. per 113 lbs.), taking on themselves all risk of seizure, &c., on transmission down the river to the harbour.

The places of Formosa, from which we had to select a port for British trade, are the following, in order of sequence from south to north: (1) Ape's Hill; (2) Taiwanfoo; (3) Hia-hoo River, Kia-e district; (4) Sookean River; (5) Woo-tse River; (6) Teek-tsan, or Choo-tsan; (7) Tamsuy; and (8) Kelung. Of these the 1st, 7th, and 8th alone were available for British shipping; and I recommended that, as Europeans had already commenced trade with Taiwanfoo, through Ape's Hill, that that should be considered the port of the capital under a consular authority, and that Tamsuy and Kelung should be also thrown open under the superintendence of a vice-consul, and that both these authorities should be responsible either to a consul residing in the capital of Formosa or to one at the nearest port of China. But it was considered that Formosan trade was as yet too small to warrant so large an establishment; and as Tamsuy was the most promising port, and at the same time the nearest to China, it was decided to make a beginning there.

The exports from Tamsuy comprise the following articles:—Rice, indigo, coarse sugar, jute, ground-nut cakes, camphor, coal, grass-cloth fibre, wood, rattans, tea, rice-paper pith, pickled vegetables, small pulse, barley, wheat, and sulphur. On the coal and sulphur I have before remarked.

The tea grown on the Tamsuy Hills is not of a superior quality; but I have been informed, on the decision of three tea-tasters to whom I sent samples, that it would readily find a market in Australia, the Cape, and Singapore. It rates at a price of 10 dollars a picul (or 2l. 5s. per 133 lbs.), and is much imported by Chinese dealers at Amoy and Foochow, to mix with the better class of teas; and the mixed commodity is then sold to foreign merchants as con-

gous, souchongs, &c. The taste of this tea is reported to be very fair ; but the objection to it is owing to the coarse mode in which the leaves are prepared and packed. As the hills, however, are no great distance from the harbour, this could be improved by energetic speculators, who might themselves visit the spot on which the article is grown and make their own arrangements.

*Rice.*—It is owing to the abundant production of this article that Formosa has justly earned the title of “the granary of China.”

*Sugar.*—Taiwanfoo has the advantage over Tamsuy in this commodity, as it is grown in much larger quantities in that neighbourhood ; and they understand there the refining process. The land at Tamsuy is well adapted for the growth of the cane ; and were it not for Swatow and Amoy usurping the market for North China we might expect a good business in the exportation of this article from Formosa.

*Jute* is exported to the opposite ports on the Chinese coast for the manufacture of rope and cord.

*Grass-cloth Fibre*, consisting of the bark of a species of hemp, is grown and exported to China to weave into the summer-grass cloth. It is twisted for the trade into large skeins of different quality. Manufactured grass-cloth and other cloths are sent to Formosa to be dyed with the fresh Formosan indigo, which is famed for its bright and lasting tints. Much of this cloth is also dyed black in a solution of coarse sugar and alum ; and some is dyed yellow with turmeric-powder dissolved.

*Rice Paper*, used largely in China for paintings and fancy-work, is a production peculiar to Formosa. It consists of the pith of the *Aralia papyrifera*, which grows wild in abundance on the Tamsuy Hills. The pith is pared continuously round and round with a sharp knife, and the thin sheet so produced moistened and flattened. The sheets are then cut in squares of different sizes, and used for the manufacture of artificial flowers, as well as for painting on. In the International Exhibition I exhibited specimens of this pith in the different stages of manufacture.

*Rattans* of rather a coarse kind are found in all parts of Formosa. A small trade is done in them with the Chinese coast, where their low price often affords them a market more readily than the finer but dearer kinds from the Straits.

*Barley* and *Wheat* are grown during the winter months. The flour produced by the latter is whiter and finer than that of the corn grown in South China.

*Camphor.*—The manufacture of camphor has for some years been monopolised by the Taotai (or head mandarin) of the island, and its sale farmed out to wealthy natives. In former years a good deal of the drug was clandestinely produced and smuggled across to China, where it was largely bought up by foreign speculators,

and carried to Hong-Kong for shipment to Calcutta, at which place it finds the readiest market, being used by the natives of Hindostan for lubricating the body and other domestic purposes. But now its monopoly is so closely watched that almost the entire trade in it falls to the lucky individual whose Chinese agents can secure for him the monopoly. This bad system has occasioned the price of the article in Hong-Kong to increase considerably, and made the profits accruing to the fortunate monopolist almost fabulous. The cost of the drug, I learn, amounts to only 6 dollars the picul at its place of manufacture. The monopolist buys it from the mandarin at 16 dollars, and sells it in Hong-Kong at 28 dollars. The gigantic laurel (*Laurus camphora*) that yields the camphor covers the whole line of high mountains extending north and south throughout Formosa. But as the greater part of this range is in the hands of the aborigines, the Chinese are able to gain access only to those parts of the mountains, contiguous to their own territories, that are possessed by the more docile tribes. The trees, as they are required, are selected for the abundance of their sap, many being too dry to repay the labour and trouble of the undertaking. A present is then made to the chief of the tribe to gain permission to cut down the selected trees. The best part of the tree is secured for timber, and the refuse cut up into chips. The chips are boiled in iron pots, one inverted over another, and the sublimated vapour yields the desired result. The camphor is then conveyed down in carts of rude construction, and stowed in large vats, with escape-holes at the bottom, whence exudes an oil, known as camphor-oil, and used by Chinese practitioners for its medicinal properties in rheumatic diseases. Samples of this oil have been sent home, and it may eventually become an article of importance in Europe. From the vats the camphor is stowed in bags to contain about a picul each, and is thus exported.

The Chinese Government has empowered the Formosan authorities to claim on its account all the timber produced by the island for ship-building purposes; and it is on this plea the Taotai appropriated the prescriptive right of dealing in camphor. About 6000 piculs of the drug are annually produced in the neighbourhood of Tamsuy.

*Woods.*—Besides the far-famed camphor-wood, of which there are several descriptions, Formosa is rich in a variety of timber. When collecting material at Taiwanfoo for the International Exhibition I sent to a large timber-yard in the town for specimens of native woods, and procured no less than sixty-five kinds. These I have lately presented to the Kew Museum.

*Petroleum, or Rock Oil.*—At Tungshao, some few miles below Tamsuy, wells of this oil occur. Through the kindness of Captain

Sullivan I procured two sample-bottles of it, which I have brought home with me for analysis, as it seems to me to bid fair to enter the market, though at present no purchasers are reported. I quote a few remarks on the oil by Messrs. Bevan, Coll, and Harris :—“It is very unlike the Rangoon earth-oil from India, or the rock-oil from America, and more like resin oil. From competent parties, to whom we have shown the samples, we have obtained the opinion that the value would not exceed 15*l.* per ton ; but to test its properties accurately a few small casks ought to be sent home for trial, in which case great care should be taken to prevent leakage, as judging from its appearance it will force its way through the best package. The cold weather has a great effect upon it ; and during the last few days it has become perfectly chilled in the bottles ; but the stoppers being in when it began to be liquid, the expansion was so sudden or great as to burst the bottles, although not one-third full.”

*Import Trade.*—The imports consist mainly of Chinese produce from the ports of Ningpo, Foochow, Chinchew, and Amoy ; and through the same channel foreign goods have found their way, but the demand is small. The staple import, as everywhere throughout China, is opium ; and to supply the 3,000,000 Chinese colonists of Formosa with this almost necessary of life a large flow is required. Many of the aborigines, I am told, have also learned to smoke it ; but they seldom manage to get more than the refuse of the pipe.

Unfortunately for the foreign commercial career in Formosa, soon after the opening of Tamsuy to British trade a rebellion broke out, to which several of the chief authorities of the island fell victims. This at first placed the newly-arrived foreigners in rather a critical position ; but the worst, I trust, has now passed. Since my departure I learn that additional merchants have arrived at Tamsuy, and that the foreign customs' inspectorate has taken the port under the shadow of its wings.\* The evangelical missions are beginning to send missionaries to the new field. All bids fair for Tamsuy becoming in a few years a flourishing little port ; and if the naval authorities would lessen the danger of navigation, and the consequent number of wrecks, by giving us a good survey of the coast, we should have cause to be more than ever grateful to Lord Elgin's treaty, in having thrown open to British enterprise such an island as Formosa.

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\* Lieutenant Pack, of H.M. gunboat *Snap*, just returned to England, tells me that last winter he had charge of the customs of Tamsuy for three weeks, and in that time collected 9900 dollars for dues and duties.—December, 1863.

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